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ABSTRACT

In this paper a conceptualization of the structure of positional occupational inequality is presented. Examining the technical division of labor and the social relations of production, three components of positional inequality are derived. They are: inequality in occupational rewards, requirements and resources. The interrelationships among these three components provide an appropriate conceptual context from which to empirically examine social differentiation and inequality at the positional level of analysis. At the positional level of analysis, inequality in intrinsic and extrinsic occupational rewards is attributable to inequality in occupational task requirements and to inequality in the resources available to occupational groups. The viability of the conceptualization is demonstrated with a preliminary analysis of the structure of occupational inequality in the contemporary United States. Where the empirical analysis is methodologically limited or otherwise incomplete, the conceptualization suggests a relatively well defined program for future research. Conceptualization and research at the positional level of analysis is not completely separable from that at the level of individual attainment. The manner in which the occupational structure underlies modes of individual attainment was noted. Some recent attempts to incorporate structural variables into those models are discussed. (Author/AM)

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THE STRUCTURE OF OCCUPATIONAL INEQUALITY

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The Structure of Occupational Inequality

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ABSTRACT

This paper presents a conceptualization of the structure of positional occupational inequality. Examining the technical division of labor and the social relations of production, we derive three components of positional inequality: inequality in occupational rewards, requirements and resources. We suggest that the interrelationships among these three components provide an appropriate conceptual context from which to empirically examine social differentiation and inequality at the positional level of analysis. A preliminary empirical analysis is presented, and implications for future research are discussed.

THE STRUCTURE OF OCCUPATIONAL INEQUALITY

Inequalities associated with a system of social stratification result from two related but analytically distinguishable social processes; differential rewards associated with different positions in the social system and the process of allocation of individuals to those positions. The former process concerns positional inequality in the occupational structure, the latter process concerns the movements of individuals among positions. Research of the past decade on social inequality in the United States has focused almost exclusively upon the movements and attainments of individuals in an exogenously given (and usually unspecified) occupational structure. This paper presents a conceptualization of the dimensions of positional inequality in the occupational structure and the interrelationships among those dimensions. Our purpose is not only to complement the sociological representation of individual attainment, but more importantly to provide the conceptual basis for a reorientation of empirical research on social inequality in the United States towards analysis of inequality in the occupational structure per se. The utility of our conceptualization is demonstrated with a preliminary analysis of a static model of occupational inequality in the United States.

Structure and Movement: Models of Individual Socioeconomic Attainment.

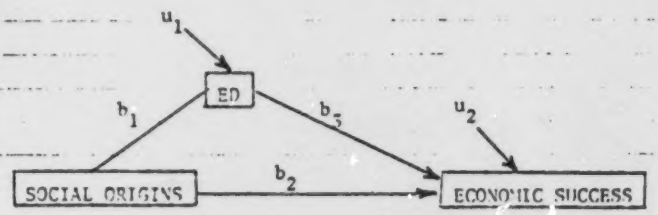
"Status attainment" models of intergenerational mobility, such as the one presented schematically in Figure 1, describe the factors affecting the placement of individuals in an exogenously determined occupational

structure. Perhaps the most important substantive issues addressed with these models are: (1) the degree of intergenerational transmission of socioeconomic success and, (2) the role of education in reproducing socioeconomic inequality among individuals from generation to generation.

The parameters of the model of Figure 1 describe the movements of individuals through the occupational structure. Parameter b_1 represents the dependence of individual educational attainments on socioeconomic origins, b_3 the direct influence of schooling on economic success, and b_2 the direct intergenerational transmission of socioeconomic success. Parameters b_1 and b_3 together describe the manner in which the influence of the socioeconomic origins of individuals are transmitted via schooling. The variation (σ_{u1}) in residual term u_1 represents inequality among individuals in schooling that is not attributable to social origins, and similarly, the variation (σ_{u2}) in u_2 represents inequality in individual socioeconomic success attributable neither to social origins nor to education. Models like this have been used by social scientists of diverse theoretical persuasions, from demographer-ecologists (Duncan, 1966, 1968) to Marxists (Bowles and Gintis, 1976). However, while there is considerable consensus on the parametric representation of individual attainment, researchers using similar models and data still differ considerably in their substantive interpretations. For example, examining attainment models based in part upon the 1962 Occupational Changes in a Generation data (Blau and Duncan, 1968), Jencks, et al. (1972) conclude that "luck" is the most important determinant of economic success, Treiman and Terrell (1975:557) assert that education is largely independent of social origins and "serves mainly as a channel of social mobility", and Bowles and Gintis

Figure 1

A MODEL OF INDIVIDUAL ATTAINMENT:



$b_1, b_2, b_3, \sigma_{u_1}, \sigma_{u_2}$: parameters describing individual movement in an exogenously given structure.

(1976; Bowles, 1972) suggest that schooling is primarily a mechanism for the intergenerational reproduction of social inequality. In our view, these differing interpretations are largely due to differing assumptions about the mechanisms of the occupational structure itself--occupational authority structures, organizational hiring, firing and promotion procedures, etc.--and certainly cannot be resolved on the basis of empirical models of individual attainment.[1] The parameters of attainment models represent patterns of individual movement and can be viewed as outcomes of an underlying occupational structure. Until the conceptualization of that structure is made explicit, social scientists will continue to disagree in their interpretation of the individual attainment process.

A persistent finding in both cross-tabular and linear parametric representations of individual social mobility in the United States is that the patterns of individual movement have remained remarkably constant throughout most of this century once changes in the "occupational structure"--as represented by the marginal distributions of social origins and attainments--are accounted for (Duncan, 1966, 1968; Hauser et al., 1975a, 1975b). Hauser, et al. (1975b:295) conclude from these findings that the changing occupational structure may be the driving social force behind patterns of individual movement and that the transformation of the United States occupational structure deserves serious attention.[2] Thus, a shift in focus from the individual to the structural level of analysis not only complements the mobility and attainment research of the past decade, it may provide insight into the social dynamic behind the processes that have been examined at the individual level of analysis.

How might the structure of occupations be represented at the positional level of analysis?

Representing Occupations in Models of Individual Attainment: Status and Prestige Scores

In models of individual attainment, occupational positions and the people who occupy them are represented by a single scheme: socioeconomic status or prestige scores. The Duncan socioeconomic index, originally developed as a proxy for "prestige" ratings (Duncan, 1961), is now most often interpreted nominally as a measure of the "goodness", "desirability" and hierarchical position of an individual's occupation as indexed by occupational requirements (education) and rewards (income). Featherman and Hauser (1976; Featherman, Jones and Hauser, 1975) suggest that this nominal "socioeconomic" dimension is the fundamental component of occupations governing individual mobility in capitalist industrial societies. One need not agree with them in order to recognize the heuristic and practical utility of a socioeconomic index for studying the intergenerational mobility of individuals. The index allows the intergenerational association of occupational positions of individuals to be represented by a single correlation, and the association can then be decomposed into component processes within the context of a linear model parameterization. However, at the positional level of occupational structure, the concept of an overall "socioeconomic" dimension is clearly inadequate. It combines occupational rewards and requirements--two components of the occupational structure that should remain analytically distinct.

A more explicit conceptualization underlies the use of occupational prestige scores. According to Siegel (1971:2), the occupational prestige

refers to evaluation by members of society of the intrinsic inequality associated with occupations. Occupational prestige as it is used in the work of Siegel and others often embodies a (perhaps naive) version of the functional theory of stratification. Normative social judgments attribute differential esteem to occupations, and this motivates individuals with requisite training and ability to enter and perform competently in those occupations. Thus, according to Siegel (1971:308-9): "The fact that the effect of skill levels on wages is almost entirely mediated by prestige means that wage rates are not direct returns to human capital, but rather reflect the payment of some 'just' return, where the equitable level is established by the general social standing of occupations." The constancy of prestige ratings over time and across societies has been cited as evidence of support for the functional theory of stratification--the invariance is taken to reflect a congruence of the normative order with the objective functional differentiation of occupational tasks (Barber, 1957; Hodge, Treiman and Rossi, 1966).

Several sociologists have questioned whether prestige ratings do indeed measure occupational prestige in a classical sense of normative evaluation and socially structured patterns of esteem, deference and derogation (Gusfield and Schwartz, 1963; Goldthorpe and Hope, 1972; Featherman, Jones and Hauser 1975; Featherman and Hauser, 1976). They suggest that prestige scales measure popular notions of the "goodness" or desirability of jobs--a synthesis of perceptions of the rewards, requirements and hierarchical positions of occupations. According to this view, prestige scales tap essentially the same "socioeconomic" dimension measured by the Duncan scale. If this is indeed the case, then

at the positional level of analysis prestige scales are as inappropriate as the socioeconomic index--they confound analytically distinct components of occupational requirements and rewards. In contrast, Siegel (1971:202) asserts that the residual variation in prestige scales that is independent of socioeconomic status does indeed measure pure prestige, and thus the prestige scale is the superior measure. Yet his own data show the prestige scale is correlated .85 with the Duncan socioeconomic index over 323 detailed census occupational categories, and the multiple correlation of the prestige scale with mean occupational income and education is 0.89 (Siegel, 1971:209, 222-226).

To summarize, in models of individual attainment status and prestige scales provide an adequate unidimensional representation of the "goodness" or hierarchical position of an individual within the occupational structure. However, as measures of the occupational structure per se they are inadequate, confounding the rewards and requirements of occupational positions.[3] When an underlying conceptualization of the occupational structure exists it is usually an unarticulated implicit functionalism--differential "status" or "prestige" is the ultimate force motivating individuals with requisite talent and training to enter and perform competently in those occupations requiring that talent and training. Lipset (1976:313) has noted the salience of status or prestige in the functional theory of stratification: "...status--honorific prestige--is the most general and persistent form of stratification... economic rewards and power are valued not for themselves, but because they are symbolic."

The Occupational Structure: The Positional Level of Analysis

Occupations may be viewed as roles within a societal division of labor (Hall, 1975). These roles constitute basic positions in the stratification systems of industrial societies and are the appropriate units of analysis to examine theories of positional inequality. Differences among these social positions form the bases for the development of theories of positional inequality, i.e. theories of the "occupational structure". Such theories attempt to explain the interrelationships among the characteristics which vary systematically among these occupational positions. As a prelude to the consideration of these theories, it is first necessary to examine those characteristics which differ among occupations.

The job--specific work performed in a particular social setting--is the basic unit by which work is assigned in industrial societies. Since there is a very large number of jobs, it is useful to aggregate them in certain ways. Occupations represent aggregations of jobs that perform similar tasks. Industries represent aggregations of jobs that produce similar goods and services (Siegel, 1971:8, 149-151; Reiss, 1961:10-11). Since the technological and social organization of work associated with the production of different goods and services will vary, the same activity or task may be structured differently across industries.

The structure of occupations and industries--the differentiated tasks carried out in the production of goods and services--involves the technical division of labor. This immediately suggests a first important dimension

of positional inequality in the occupational structure--inequality of the technical requirements of occupations. These requirements include years of schooling, specific vocational training required to perform tasks, and the degree of complexity in dealing with people, symbols and physical materials required for the tasks.

The technical production process produces something of value, suggesting one component of the second dimension of occupational inequality--inequality of occupational rewards. We define extrinsic rewards as outcomes of differential claims to the value of the product of the technical production process. The second reward component, intrinsic rewards, are those that derive from the nature of the task itself and do not involve explicit claims to the value of output. These can include opportunities for self-direction, the degree to which work is challenging or interesting, social and physical conditions of work, and social esteem.

The technical division of labor produces unequal rewards and requirements. These characteristics may be regarded as properties of the occupational structure, since they result from the nature and structure of activities associated with various occupations. The functional theory of stratification (and neoclassical economic theory) suggest that we go no further. Occupational rewards motivate individuals to perform the activities associated with the occupation, and their distribution to individuals is contingent upon continued performance in an occupation. Unequal intrinsic and extrinsic rewards "unconsciously evolve" (Davis and Moore, 1945: 243) to ensure that individuals with the requisite talent and training enter the appropriate positions. But the differentiated occupational structure does not "unconsciously evolve." There is

another dimension to it--the social relations of production which produce positional inequality of occupational resources. Analytically distinguishable from the purely technical relationship between occupational activities and the production process, occupational groups have differential access to resources allowing: (1) claims upon the value of the output of the production process; and (2) control over the production process that can affect intrinsic rewards. Some resources may be specific attributes of occupational groups, for example, some types of organized bargaining power. Others, such as ownership and authority, although not attributes of occupational groups per se, vary considerably across occupations and greatly affect the ability of occupational groups to command intrinsic and extrinsic rewards. While these resources may not belong in a taxonomy of occupational attributes, they have a central role in a theory of occupational inequality. Furthermore, these resources are not simply entities to which each occupational group has certain degrees of access. They are also relational, affecting the relationships of occupational groups to the production process and to each other as well.

The most obvious resource within the social relations of production is the right of ownership. Ownership provides a basis for claims upon the value of output. Ownership also allows access to control over the production process, providing the potential for the manipulation of intrinsic rewards. A second resource is organizational authority--at higher levels involving the capacity to make decisions affecting the organization of production process and the relationship of labor to it, at middle levels involving the capacity to make decisions about the hiring, firing, and promotion of occupational incumbents, and at lower levels

involving the supervision of occupational incumbents. Each of these aspects of occupational authority involves to some degree a potential to exert claims upon the value of output and power to affect the intrinsically rewarding aspects of occupational tasks.

Organized labor market bargaining strength of occupational groups--what Giddens (1973:103) terms "market capacity"--is another resource providing potential for claims upon rewards. Unions are a source of market capacity, as are professional associations and other social forms affecting occupational entry, the allocation of labor and the conditions of work.[4] Labor markets appear to be considerably segmented along occupational lines with the negotiation over job rewards determined separately within occupations (Stolzenberg, 1975). Therefore, differences in labor market structures may contribute to differences in rewards among occupations.

Occupational resources are employed to make claims upon rewards within an organizational context. Consequently, certain organizational attributes should be considered as resources available to occupational groups and as contingencies affecting the efficacy of the occupational resources discussed above. Organizational resources may be viewed as a function of the location of the organization in a "capital-technology sector" as defined by the concentration of capital, level of technology and scale of operation of the enterprise. Economist Robert T. Averitt (1968) suggests a two sector "dual economy" for non-public firms. Organizations in the "center" sector are characterized by concentrated capital, high level technology, large scale operations, and their profit-maximizing strategy is constrained by a goal of long-run growth and survival. In contrast, "periphery" organizations are small in scale of

operations, do not command resources for growth, and often do not utilize high level technology. Their strategic orientation is towards short-run profit maximization and is adaptive--reacting to the immediate environment rather than planning for the long-run. The sectoral location of an organization is the outcome of a historical process that involves the interaction of technological forces and the social relations of production. The concentration of capital is the culmination of past strategic decisions aimed at expanding capital by owners and their representatives and usually involving the implementation of technological advances in the process of production.

We expect the organizational resources available to occupational groups by virtue of ownership or authority in center organizations to differ in magnitude and in kind from those available in periphery organizations (e.g., claims based upon ownership of capital will be more powerful when capital is in a stronger position, and control over the production process provides access to more and perhaps different rewards when the production process is of considerable magnitude and technically sophisticated). Furthermore, sectoral location can be important to those occupational groups having neither ownership nor authority resources. Labor market economists (Doeringer and Piore 1971; Bluestone 1970) have suggested that many jobs in center firms are characterized by an internal labor allocation structure, insulated from market forces, providing employment security, promotion opportunities, and wage levels not available from jobs in periphery firms.[5] That is, labor markets are segmented by sectoral location both within and among occupational groups. To the extent that differential sectoral location occurs among groups, it is a factor that may account for inequality of occupational rewards.

Finally, the state has an impact on the resources available to occupational groups; it is another social agent insuring that the occupational structure does not "unconsciously evolve." Although issues in political economy are somewhat beyond the scope of our conceptualization, the roles of the state deserve brief mention here and serious consideration in any further elaboration of a theory of occupational inequality. The state affects both the technical division of labor and the social relations of production by: (1) underwriting labor-management interactions and property relationships; (2) producing goods and services; (3) consuming output of the production process; (4) subsidizing research leading to technological change; and (5) supporting investment in human capital (Shonfield, 1965; Galbraith, 1973; Parkin 1971; O'Connor, 1973). Thus, these five roles of the state are relevant to a theory of occupational inequality to the extent that they differentially affect occupational groups at any one point in time or to the extent that they change over time in their relationships to one or more groups.

To summarize, the technical division of labor provides an occupational, industrial, and organizational context for the performance of differentiated tasks. We derive from this two dimensions of occupational inequality--requirements and rewards (both intrinsic and extrinsic). The social relations of production define differentiated occupational resources which occupational groups utilize to exert claims upon rewards. A schematic representation of this conceptualization is presented in Figure 2. A reciprocal relationship between the technical division of labor and

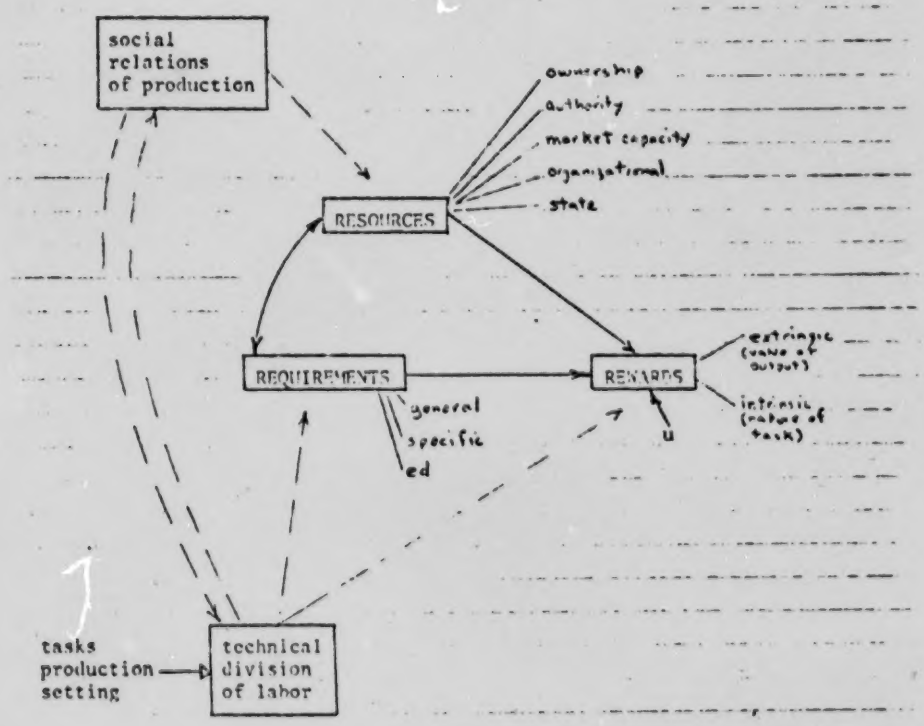
the social relations of production is shown to indicate that while these two underlying forces of production are analytically distinct, empirically they can be mutually reinforcing (or offsetting). Some examples of this reciprocal relationship were given above. Technical advances allowing for the automation of production processes also allow for the social control of incumbents in subordinate occupational positions (Braverman, 1974), while the skill specificity associated with the technological change can enhance the bargaining position of unionized occupations (Doeringer and Piore, 1971). Conversely, the emergence of new corporate forms associated with the expansion of capital have provided the impetus for the implementation of new production processes (Chandler, 1962).

In contrast to the concise relationships among variables specified in work on individual attainment, our conceptualization of the occupational structure is rather abstract. Hopefully, this is only a temporary state of affairs to be remedied by the interaction of empirical research and elaboration of theory at the occupational level of analysis.

We present our conceptualization of occupational structure as both a basis for empirical analysis of the occupational structure per se and a complement to models of individual attainment. In the following section we present a preliminary analysis of a static (cross-sectional) representation of the occupational structure. Eventually we would like to contribute to the development of a dynamic model of the historical development of the American occupational structure, say from ante-bellum times through the present stage of advanced capitalism. Such a model

Figure 2

A MODEL OF POSITIONAL INEQUALITY IN THE OCCUPATIONAL STRUCTURE:



would go beyond examination of the changing distribution of individuals across occupational groups to provide a structural representation of the interrelationships of rewards, requirements, and resources at the occupational level of analysis.

With respect to models of individual attainment, the positional level conceptualization can provide mechanisms for interpretation of parameters of those models. For example, the work of several labor market economists (Thurow 1975; Doeringer and Piore, 1971) suggests that the differences in labor allocation mechanisms between internal job structures in the center sector and competitive structures in the periphery sector may explain the race and sex differences in returns to human capital that we detect in models of individual attainment. A positional level conceptualization of occupational structure may also suggest "structural" variables such as ownership or authority position that can be explicitly incorporated into models of individual attainment. The paper of Wright and Perrone (1977), incorporating "structural class position" into such models, is an initial attempt in that direction.

Preliminary Analysis: A Cross-Sectional Examination of Occupational Inequality in Rewards, Requirements, and Resources

Our preliminary analysis is based on data from the 1972-73 Quality of Employment Survey conducted by the Institute for Survey Research at the University of Michigan. Attributes of forty occupational groups (see Table 1) were constructed from data on 1485 employed individuals concerning the social and economic conditions of their employment.

The analysis reported here is a first stage in an ongoing research project utilizing information on detailed occupational categories synthesized from various sources of data. This preliminary analysis is presented to demonstrate the viability of our conceptualization for empirical research; it is not presented as a definitive model of the structure of occupational inequality in the United States in 1973. Where we discuss the limitations of these data and analysis, we attempt to indicate how future research based upon our conceptualization will remedy these shortcomings. Because this is a first attempt at empirical research on occupational inequality, we devote considerable attention to simple descriptive elaboration of our measures of occupational rewards, requirements, and resources before examining the interrelationships among those dimensions.

While the Quality of Employment Survey is one of the few sources of data containing information on occupational resources as well as requirements and rewards, it does impose several limitations upon our analysis. It requires that we aggregate individual responses to obtain "structural" characteristics of occupational groups. This aggregation need not invalidate our measures as properties of social collectives (cf. Lazersfeld and Menzel, 1969). Indeed, some characteristics of a social structure like the unemployment rate are inherently aggregated characteristics of individuals. Nevertheless, particularly with respect to occupational resources, superior measures could be obtained at the occupational, industrial and organizational level instead of from a social survey of individuals.

A second limitation is that the size of the Quality of Employment Survey sample and the Census classification system imposed some practical limitations upon our definitions of occupational groups. Conceptually, occupations represent aggregations of jobs that involve similar tasks. If occupational groups are meaningful social actors, then there should be some appropriate level of aggregation at which those groups are reasonably homogeneous with respect to task requirements, rewards, and resources. Unfortunately the detailed census categories for occupation and industry were not constructed to capture homogeneity on any of these three dimensions (cf. Siegel, 1971:153-174). The problem of heterogeneity in the Census classification is compounded by our decision to aggregate even further in order to maintain a minimum of 20 sample cases in each occupational group.

The forty occupational groups listed in Table 1 were constructed primarily from the Census major occupation and industry group aggregation of the detailed three-digit classifications. When the number of sample cases permitted, more detailed information was used to make substantive distinctions among occupations. (For example, the category "truck drivers" represents a single three-digit occupational category and "clerical workers--secretaries" represents six three-digit categories.[6]) Within the constraints imposed by sample size and the heterogeneity in the classification systems, we attempted to preserve the functional task homogeneity of occupational groups while also allowing for differentiation in our three dimensions within occupations of nominally equivalent major group title. For example, among craftsmen other than foremen, we allow

Table 1.

Occupational Groups

	Groups	N
1.	Protective service workers	28
2.	Personal service workers--retail trade	36
3.	Personal service workers--other	77
4.	Health service workers	24
5.	Laborers (excluding farm)	53
6.	Farmers	37
7.	Transport equipment operatives (except truck drivers)	28
8.	Truck drivers	28
9.	Operatives--durable manufacturing	92
10.	Operatives--nondurable manufacturing	71
11.	Operatives--other	37
12.	Craftsmen--foremen, n.e.c.	34
13.	Craftsmen--construction	58
14.	Craftsmen--durable manufacturing	44
15.	Craftsmen--nondurable manufacturing	23
16.	Craftsmen--transportation, communication, public utilities	20
17.	Craftsmen--other	47
18.	Clerical workers--secretaries	55
19.	Clerical workers--manufacturing	25
20.	Clerical workers--transportation, communication, public utilities	25
21.	Clerical workers--wholesale and retail trade	20
22.	Clerical workers--finance, insurance, real estate	28

Table 1.

Continued

	Groups	N
23.	Clerical workers--public administration	22
24.	Clerical workers--other	43
25.	Sales—finance, insurance, real estate	23
26.	Sales--wholesale trade, other	13
27.	Sales--retail trade	36
28.	Managers and administrators--construction	20
29.	Managers and administrators--manufacturing	25
30.	Managers and administrators--wholesale trade	23
31.	Managers and administrators--retail trade	71
32.	Managers and administrators--finance, insurance and real estate	17
33.	Managers and administrators—public administration	21
34.	Managers and administrators--other	55
35.	Professional and technical workers—engineers	39
36.	Professional and technical workers—higher education and science	20
37.	Professional and technical workers—health professionals	30
38.	Professional and technical workers--other education	65
39.	Professional and technical workers--technicians, various	21
40.	Professional and technical workers--other	51

for five distinctions by industry. Not only are the task requirements and skills of craftsmen likely to vary across these industries, but the resources available to craftsmen (e.g., extent and type of unionization) may differ as well. Consequently, as social actors these five categories of craftsmen may function as distinct occupational groups with differential rewards attributable to their different configurations of requirements and resources. For similar reasons distinctions were made within many of the other major occupational group categories.

For each of the forty occupational groups, we have three measures of occupational requirements. The mean educational attainment (ED) of individuals in the occupational groups indicates the certification requirements of the occupation as well as any required cognitive and noncognitive characteristics that may be indexed by educational attainment. The mean Specific Vocational Preparation score (SVP) is constructed from United States Department of Labor (1968) assessments of the training time required to adequately perform the tasks associated with a job. Only training specifically related to vocational requirements is included in these assessments. The mean General Educational Development score (GED) is constructed from Department of Labor assessments of the level of reasoning with respect to dealing with people, data, and things required to adequately perform in a job.[7] The three measures of occupational requirements are expressed in standard form--deviations from their respective means in standard deviation units--for all analyses reported here.

The relatively large correlations among the three indicators of occupational requirements (.56 to .86; see Table 2) suggest that all three

may to some degree be measures of a single overall dimension of task requirements. However, we also expect there to exist a unique component of each of the three measures; general requirements, vocationally specific training and educational preparation and certification are certainly conceptually distinct. The GED and SVP scores might also differ from mean educational level since the former are direct assessments of occupational requirements while the latter is not. (This problem will be minimal if the discrepancy between the mean education of incumbents and the required educational level is nearly constant across occupational groups; see Siegel, 1971:267-270.) Furthermore, the GED and SVP scores may be contaminated by raters' perceptions of the educational levels of occupational incumbents. Consequently, for both analytical and methodological reasons it may be useful to examine the relationship between education and the Department of Labor ratings and the residual variation in those ratings that is not associated with mean education.

Figure 3 presents a plot of specific training versus education and Figure 4 a plot of general requirements versus education for the forty occupational groups. All managerial and professional groups (28 through 40) are located above the mean on both GED and SVP (nearly all are at least one-half standard deviation above the mean). These thirteen groups are somewhat more differentiated with respect to education, ranging from just below the mean (managers in construction (28) and wholesale trade (30)) to about two and one-half standard deviations above the mean (professionals in education (36,38)). Occupations located considerably below the mean on all three measures are personal service, laborer, and operative groups (2,3,5,7,8,9,10,11). Health service workers (4), clerical

workers in manufacturing (19) and trade (21), and retail sales workers (27)--groups that could be called part of a "white collar" working class--also fall below the mean on all three requirement measures. The remaining clerical groups, protective service workers (1), and wholesale sale workers (26), locate more highly with respect to education than they do with respect to specific training or general requirements, suggesting that perhaps for these groups educational certification serves more as a screening device than an indicator of either specific or general occupational skills.

The solid diagonal line in Figure 3 represents the linear regression of SVP scores on mean group education. Note that farmers (6) and craft groups (12 through 17) have quite large residuals. These groups require substantially more specific vocational training than would be predicted on the basis of mean educational level. Indeed, where these seven groups and the two groups with unusually high education levels (professionals in education (36,38)) are ignored, the proportion of variance in SVP scores attributable to educational level nearly doubles from .32 to .63, (see the dotted diagonal line on Figure 3). (A similar but much smaller effect occurs in the relationship between GED and education when the same groups are omitted; see the two diagonal lines on Figure 4). Except for the farming and crafts groups, occupational groups appear to be distributed along a continuum from low to high in specific, general and education requirements. With respect to occupational requirements, the "disadvantaged" jobs are associated with service, skilled, and semi-skilled manual occupations, and the "new-working class" nonmanual

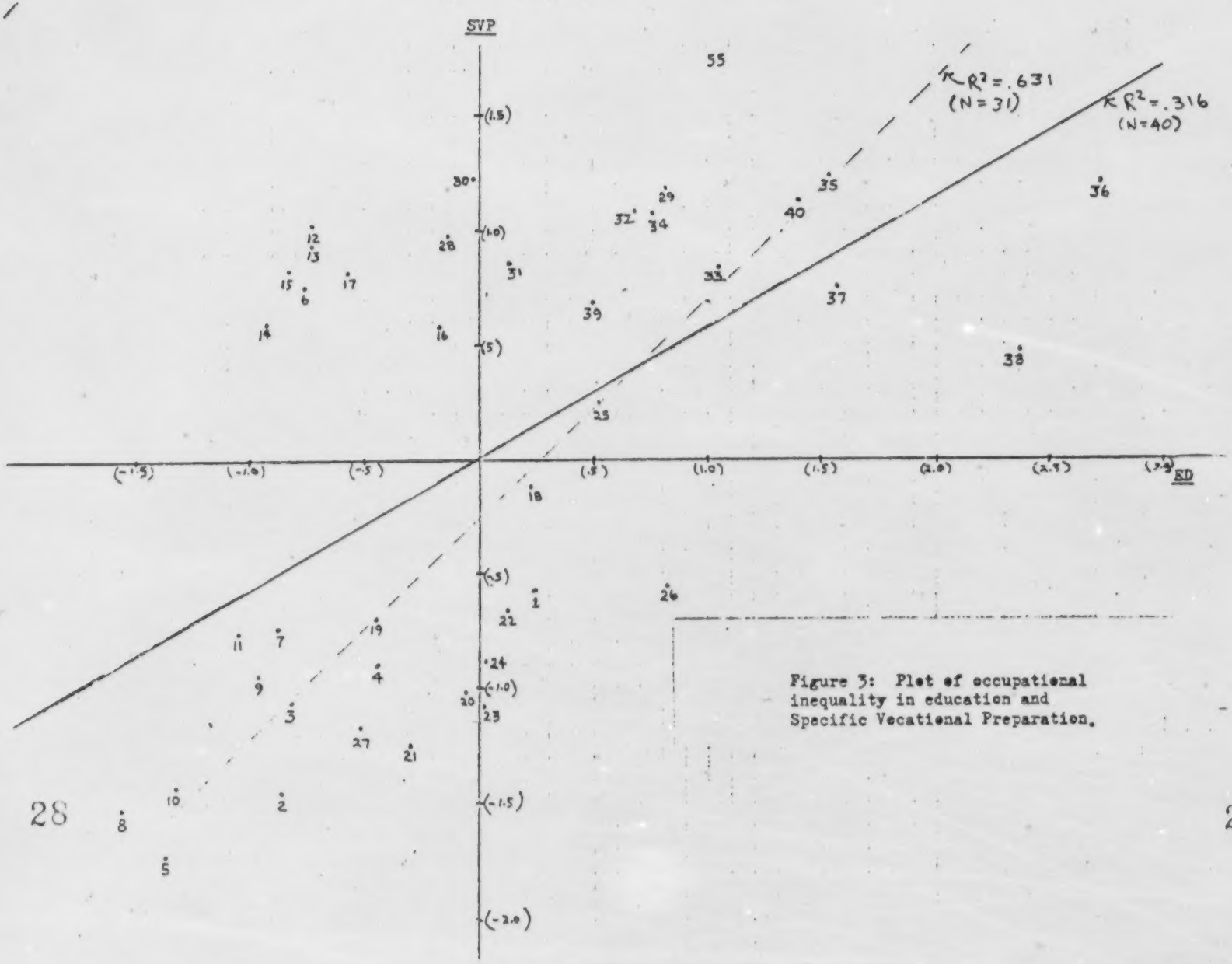


Figure 3: Plot of occupational inequality in education and Specific Vocational Preparation.

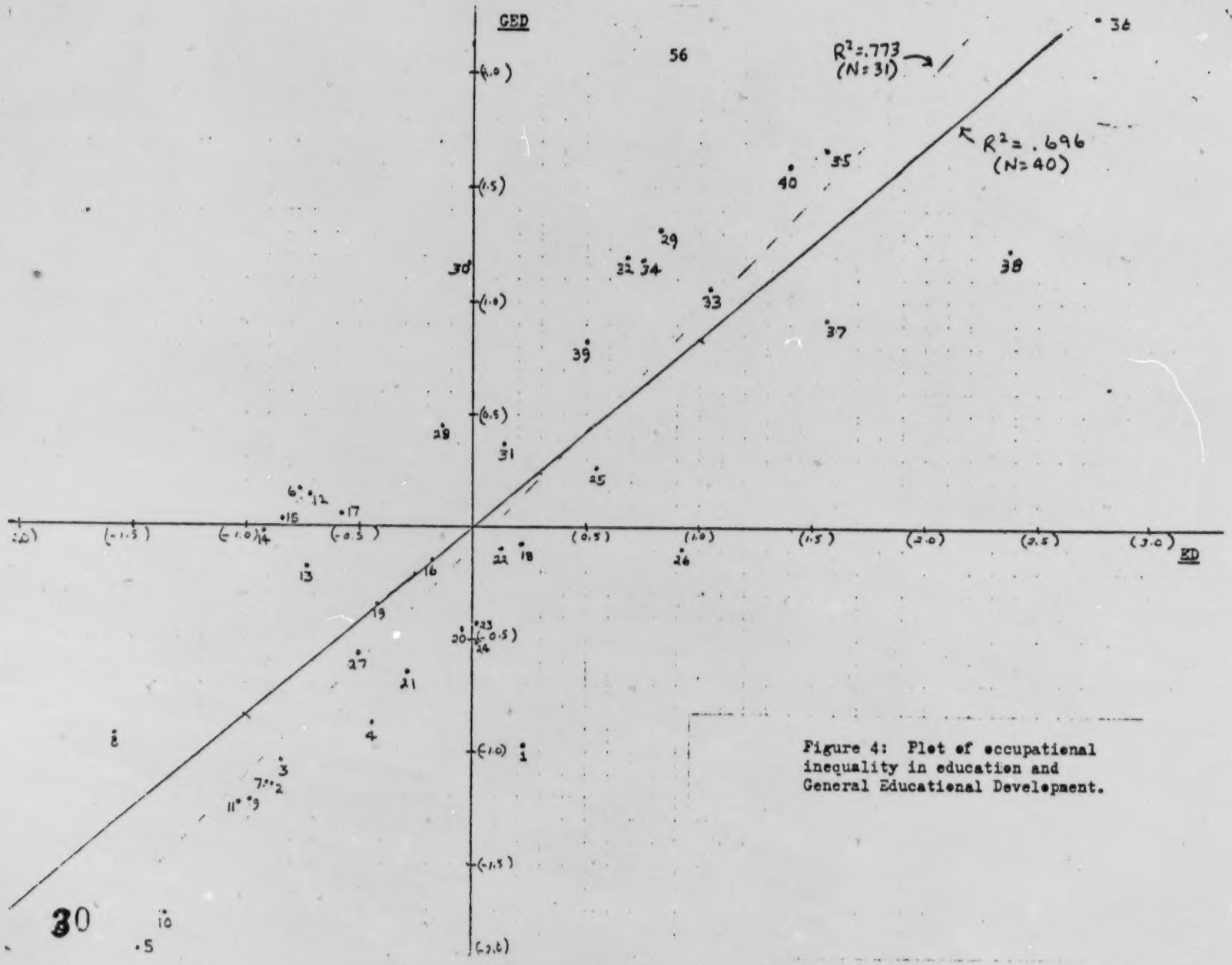


Figure 4: Plot of occupational inequality in education and General Educational Development.

occupations--clerical and retail sales. The "advantaged" nonmanual jobs are associated with managerial and professional occupations. The farming and craft occupations hold a unique position in the contemporary occupational structure, requiring specific vocational training but not educational certification.[8]

While each of the three measures of requirements are to a degree empirically distinct as well as conceptually distinct, the relatively high intercorrelations among them and the relatively small number of groups precludes assessment of their individual effects on occupational rewards. Consequently, we combined them into a single composite requirement scale (REQ), weighting the three component measures by a canonical correlation analysis in order to maximize the linear association between REQ and our two reward measures (INTR and EXTR; see below). The standardized canonical weights were .085 for ED, .227 for GED and .740 for SVP; the canonical correlation was .819. The individual measures will be included in future work at a less aggregated level of analysis. In that research we will construct multiple indicator models of occupational requirements to examine the degree to which the measures are "contaminated" by one another or by an overall "status" dimension.

Three measures of occupational resources are included in our analyses. The authority position of an occupational group (SUP) is measured by the proportion of occupational incumbents who supervise the work of others. The bargaining strength of an occupational group (UNION) is measured by the proportion of occupational incumbents belonging to a union or employees' association. The average size of the organization

in which occupational incumbents work (SIZE) is used as a proxy for organizational resources available to an occupational group.

While authority position, bargaining strength, and organizational resources are central resource components of our conceptualization of inequality in the occupational structure, the three measures are far less than ideal. In future work, our measures of authority position will include indicators of decision-making power in hiring and firing and in pay and promotion. The bargaining strategy of unions depends on the structure of the labor market; for example, considerable differences often exist between the strategies of craft unions and industrial unions (Doeringer and Piore, 1971:148-150). Employees' associations for professional occupations often rely more upon restrictions on entry to the occupation through licensing than do labor unions. Future conceptual elaboration and empirical research will need to incorporate these different sources of organized labor market power. While scale of operations as measured by number of employees is perhaps the best single easily obtained indicator of the sectoral location of an organization, a more complete view of organizational resources would include direct measures of capital intensity, automation of production processes, long-run organizational growth and profit strategies, and the "market position" of the organization with respect to its (material, human, and informational) inputs and outputs. Furthermore, not all groups have equal access to organizational resources, and the organizational resources themselves may differ depending upon the position of an occupational group in the technical production process and in the hierarchial authority structure.[9]

Because of the limitations of our measures of occupational resources our empirical results must be considered as preliminary. We have already noted that the empirical results are presented to demonstrate the viability of our conceptualization for a continuing program of empirical research and to suggest a direction for that research; we cannot claim to present a definitive assessment of the role of occupational resources in the structure of occupational inequality.

Plots of supervisory position by size and union bargaining strength by size appear in Figures 5 and 6 (all measures are expressed in standard form). Relatively "powerless" groups, those at least one-half standard deviation below the mean on both union and supervisory resources, are personal service occupations (2,3), secretaries and clerical workers in finance, insurance, or real estate, (18,22) and sales workers not in finance, insurance, or real estate (26,27). Occupational groups at least one-half standard deviation above the mean in supervisory position include craft foremen (16), all managerial groups (28 through 34), and all professional groups except technicians (39) and educators not in higher education (38; mostly primary and secondary school teachers). The relatively unionized or otherwise organized occupational groups are protective service workers (1), nonfarm laborers (5), operatives other than the residual category (7,8,9,10), craftsmen other than foremen (13,14,15,16), clerical workers in manufacturing, in transportation, communications, and utilities, and in public administration (19,20,23), and educators not in higher education (38). Occupational groups that tend to be located in large organizations (again, about one-half standard deviation or more

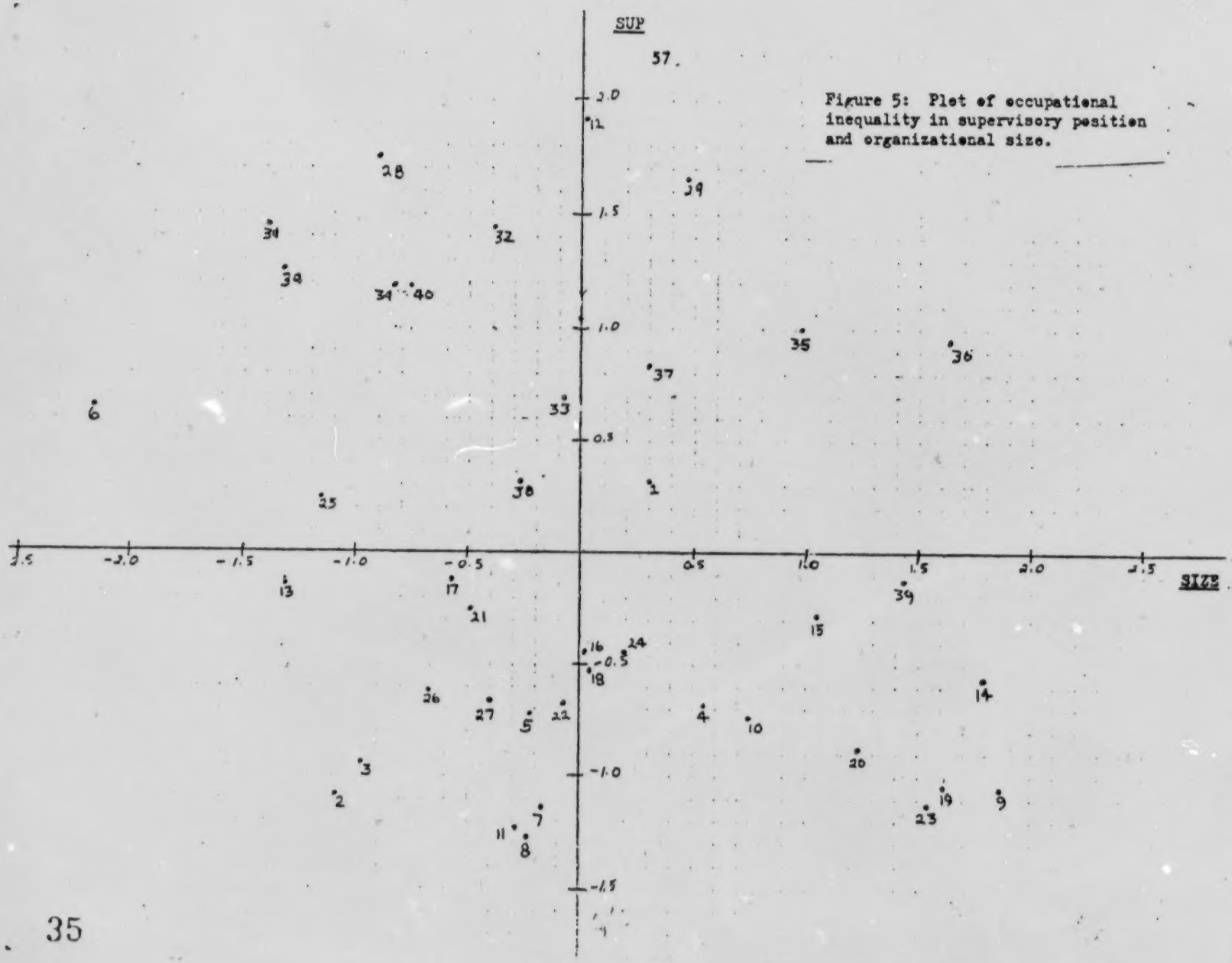


Figure 5: Plot of occupational inequality in supervisory position and organizational size.

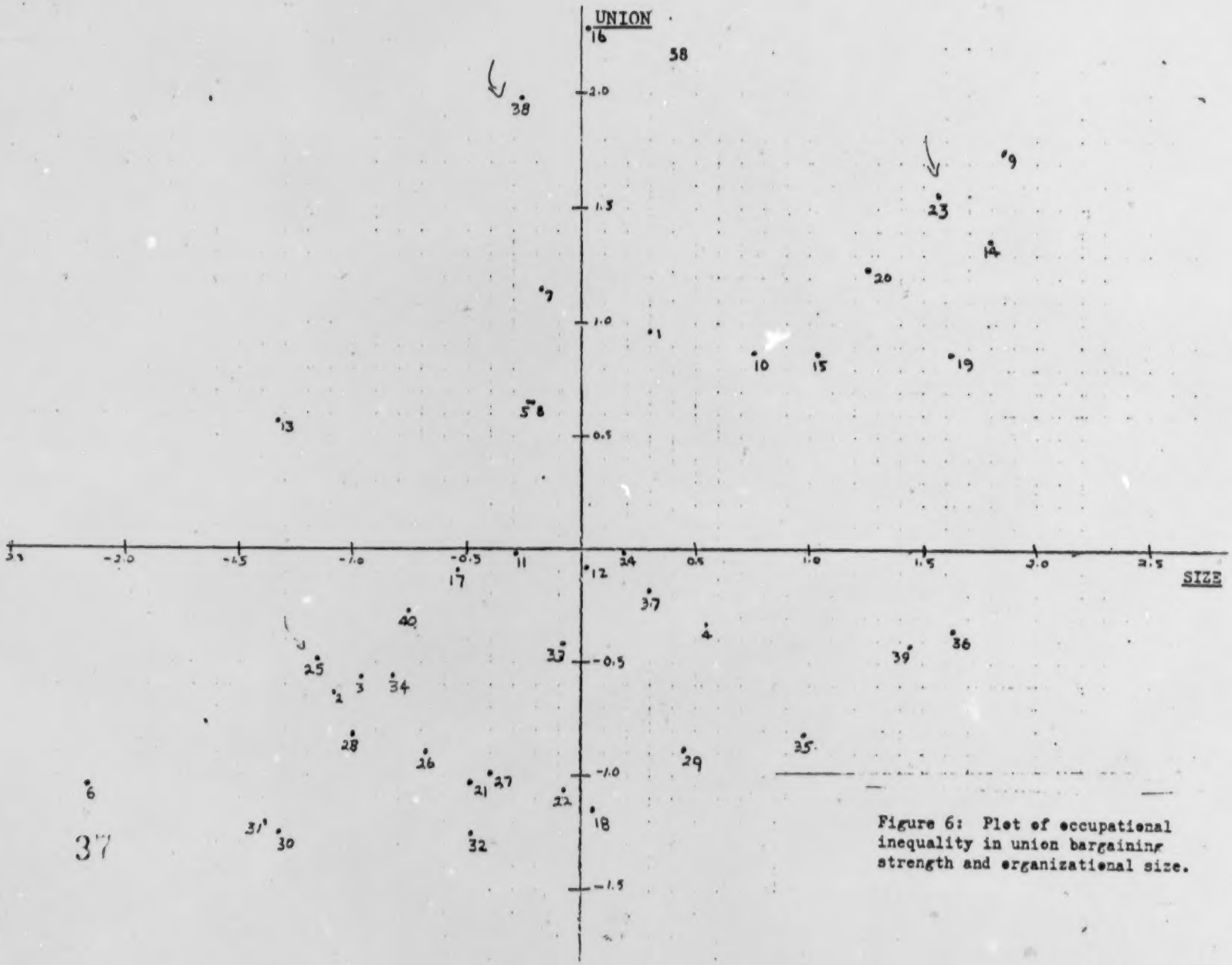


Figure 6: Plot of occupational inequality in union bargaining strength and organizational size.

above the mean) are operative, craft, clerical and managerial groups involved in manufacturing (9,10,14,15,19,29), health service workers (4), engineers and technicians (35,39), and clerical workers in transportation, communications, and public utilities and in public administration (20,23).

We were more successful in achieving a correspondence between concept and measurement for occupational rewards. Our measure of intrinsic rewards is the group mean of a scale composed of six items concerning rewards that relate to the nature of the occupational task--whether the work is interesting, challenging, allows for autonomy, etc. Our measure of extrinsic rewards is the group mean of a canonically weighted composite of total annual income[10] and a three-item scale assessing opportunities for promotion. A canonical correlation analysis provided weights for the income and promotion measures so that the composite would have maximum linear association with the three measures of occupational resources and the three measures of occupational requirements. The standardized weights were .789 for the income measure and .300 for the promotion measure; the canonical correlation was 0.772.

Figure 7 is a plot of intrinsic and extrinsic rewards for the forty occupational groups (both variables are measured in standard form). Only six of the forty groups are above the mean on one reward and below the mean on the other, and none is at least one-half standard deviation below the mean on one and at least one-half standard deviation above on the other (the correlation between the two rewards is .774; see Table 2). All the managerial groups and all the professional groups except the one composed mostly of primary and secondary school teachers (38) are above the mean on both rewards (although managers in finance, insurance, and real

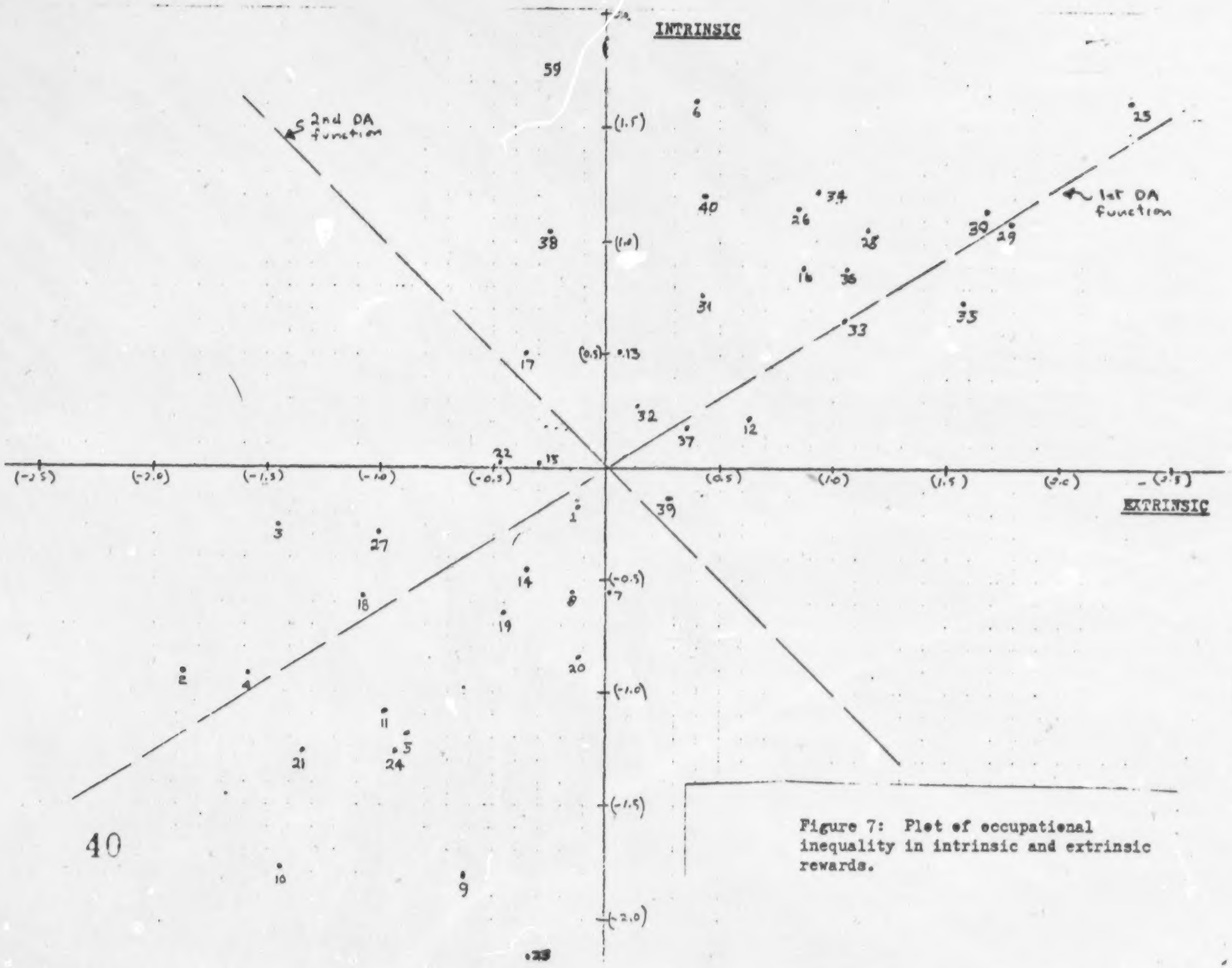


Figure 7: Plot of occupational inequality in intrinsic and extrinsic rewards.

estate (32) and health professionals[11] (37) are only slightly above the mean on each reward). Also above the mean on both rewards are the two groups with the highest level of intrinsic rewards: farmers (6), and salespersons in finance, insurance, and real estate (25). The latter group also has the highest level of extrinsic rewards. Finally, salespersons in wholesale trade (26), craft foremen (12), and craftsmen in construction (13), and in transportation, communication, and utilities (16) are above the mean on both rewards. Groups considerably below the mean on both rewards encompass every major occupational group except craftsmen, managers, and professionals. For example, personal service workers in retail trade (2), health service workers (4), nonfarm laborers (5), operatives in manufacturing and other operatives (9,10,11), secretaries, clerical workers in retail trade, and other clerical workers (18,21,24), are all at least one standard deviation below the mean on one reward and one-half standard deviation below the mean in the other. Poorly rewarded jobs subsume many kinds of occupational tasks in the contemporary occupational structure.

Because both measures of rewards are averages of the individual responses of occupational incumbents, we performed several analyses to determine the degree to which systematic inequality in the measures occurs between rather than within our forty occupational groups. First, we computed that 23 percent of the variance in intrinsic rewards (INTR) and 26 percent of the variance in extrinsic rewards (EXTR) occurs among the 40 occupational groups. While most variation occurs within the forty groups, not all of it reflects systematic individual level variation in occupational rewards. Some of it is attributable to occupational level variation that occurs within our heterogeneous aggregate categories, and

Table 2.

Correlations Among Measures of Occupational Requirements, Rewards, and Resources (N=40)

	1	2	3	4	5	6	7	8	9	10
1. REQ	--									
2. ED	.691	--								
3. GED	.938	.834	--							
4. SVP	.984	.563	.865	--						
5. SIZE	-.098	.088	-.024	-.135	--					
6. SUP	.834	.556	.768	.827	-.286	--				
7. UNION	-.288	-.216	-.354	-.256	.506	-.445	--			
8. INTR	.791	.541	.735	.782	-.501	.703	-.382	--		
9. EXTR	.746	.525	.713	.729	-.132	.694	-.190	.774	—	
10. PRSTG	.869	.860	.923	.791	.112	.757	-.245	.601	.651	--

some is due to individual response error in measuring the rewards (see Kalleberg, 1975, for a discussion of the reliability of the measures used here). A regression analysis of the within-group covariation revealed that only 5 percent of the within-group variance in intrinsic rewards and only 8 percent of the within-group variance in extrinsic rewards was accounted for by within-group variation in requirements and resources. Thus, while considerable variation in rewards occurs within our forty occupational categories, most of the systematic variation in the rewards seems to be captured by our forty groups.

In addition to the univariate analyses of the reward measures, we also computed a multivariate discriminant analysis on the two measures in order to examine the underlying dimensions of between-group variation in occupational rewards. Discriminant analysis selects successive orthogonal linear composites of intrinsic and extrinsic rewards that have maximum variation between the forty groups relative to their variation within the forty groups (see Tatsuoka, 1971:157-183). The results of the analysis are reported in Table 3. Both discriminant functions were statistically significant, although more than three-fourths of the total discriminatory power is attributable to the first function. The two functions are indicated by the dotted diagonal lines on Figure 7. (The location of each group on a discriminant function can be obtained by projecting its location perpendicularly to the dotted line.) The first function, the one that maximally differentiates among the groups, discriminates groups with more of both rewards from those with less of both rewards, and it weights extrinsic rewards slightly more heavily than intrinsic

Table 3.

Discriminant Analysis Measures of Occupational Group Differences in Rewards

	Standardized Discriminant Coefficients[a]	
	DA Function 1	DA Function 2
INTR	.465	-.567
EXTR	.667	.495
Canonical ρ	.544	.355
% Discrimination	76.9	23.1

[a]Coefficients are standardized relative to within group variation. Coefficients standardized with respect to between group variation are .426 and .720 for the first function, and -.520 and .534 for the second function. Both functions are statistically significant at the .001 level.

rewards. Sales workers in finance, insurance, and real estate (25) score highest on this function, service workers in retail trade (2) and operatives in nondurable manufacturing (10) score lowest. The second discriminant function differentiates groups with respect to the "trade-off" between intrinsic and extrinsic rewards, weighting the (standardized) intrinsic and extrinsic rewards measures almost equally but with opposite sign. Clerical workers in public administration (23) locate at the extrinsic extreme of the trade-off, while miscellaneous personal service workers (3), teachers not in higher education (38), and farmers (6) locate almost equally at the intrinsic extreme. To summarize, the discriminant analysis provides a statistical rationale--between group related to within group inequality--for the descriptive analysis above of the location of the groups in the two-dimensional plot of rewards. It suggests that the forty groups are differentiated in their rewards along two dimensions, primarily with respect to the "goodness" or "badness" of both rewards, but also with respect to the "trade-off" between intrinsic and extrinsic rewards.

Having described the location of our forty occupational groups with respect to occupational requirements, rewards, and resources, we now present several models that assess the manner in which inequality in occupational rewards can be attributed to inequality in requirements and resources. All models are estimated from the correlations presented in Table 2. First we specify that inequality in intrinsic and extrinsic occupational rewards is attributable to inequality in resources and

requirements. In a second model we argue that organized bargaining strength should not be considered a determinant of intrinsic rewards and should perhaps be considered an outcome of those aspects of occupational tasks that determine intrinsic rewards. A third model assumes that occupational prestige scores measure a third type of occupational reward and specifies prestige ratings to be determined by occupational requirements and resources. Finally we present a canonical correlation analysis to test whether occupational resources and requirements affect both intrinsic and extrinsic rewards through a single intervening process.

Estimates for the first model appear in columns 1 and 3 of Table 4. The model accounts for about four-fifths of the between group variance in intrinsic rewards (INTR) and about three-fifths of the between group variance in extrinsic rewards (EXTR). Inequality in rewards related to the nature of occupational tasks (intrinsic rewards) is largely attributable to the requirements of those tasks (REQ) according to our first model. Neither authority position (SUP) nor organized bargaining strength (UNION) appear to have been used by occupational groups to enhance occupational rewards.[12] Occupational groups that tend to be located in large organizations (SIZE) are likely to obtain less intrinsic rewards, net of occupational requirements, union resources, supervisory resources. While none of the three resources appears to have been utilized by occupational groups to increase intrinsic rewards, the authority position of an occupational group appears to make a modest contribution to extrinsic rewards, and organized bargaining strength has a small effect

Table 4.

Standardized Regression Coefficients for Models of the Relationship of Occupational Rewards to their Determinants (N=40).

Independent Variables	Dependent Variable[a] 1 INTR	2 INTR	3 EXTR	4 UNION	5 PRSTG	6 PRSTG
1. REQ	.833*	.888*	.544*	-.068	.668*	.600*
2. SIZE	-.483*	-.463*	-.060	.481*	.294*	.337*
3. SUP	-.149	-.169	.277	-.374	.242	.262
4. UNION	.050	--	.122	--	-.093	-.095
5. INTR	--	--	--	.176	--	.091
6. EXTR	--	--	--	--	--	.023
R^2	.817	.815	.583	.362	.819	.821

[a]Asterik indicates rejection probability of less than .01 for the conventional t-test of the hypothesis that a coefficient is zero. The tests are merely suggestive and should be interpreted with caution, since the data are not from a sample of occupations and are aggregated from the responses of occupational incumbants.

upon extrinsic rewards. As with intrinsic rewards, occupational requirements make the strongest relative contribution to inequality in extrinsic occupational rewards. However, for several reasons we hesitate to attribute the requirements effects to "technical-functional" processes and the resource effects to "conflict-power" processes, even though aspects of both types of theoretical explanation are incorporated into the conceptualization underlying this analysis. The components of the requirement measure are more complete and of better quality than the three measures of occupational resources, and the requirement composite was constructed to have maximum association with the reward measures. Furthermore, the requirement measure subsumes a degree of occupational group screening and monopolization of occupationally specific skills, two aspects of resources that the model attributes to requirements. Nevertheless, future research should be able to disentangle the distinct influences of requirements and resources, and it should also explicitly model the interaction and reciprocity between requirements and resources in their effects on occupational rewards. While our conceptualization suggests that organizational variables (e.g., SIZE) should interact with requirements and other resources, the small number of occupational groups and the colinearity among measures precluded presenting stable assessments of such effects here.[13]

Giddens (1971:207-215) and others (Parkin, 1971:91; Galbraith, 1974: 107,175,289-291; Braverman, 1974:10,150) have noted that in advanced capitalism, labor unions become increasingly "economistic," oriented toward increasing labor's share of the value of output instead of toward labor control over the production process. The negligible effect of unionization on intrinsic rewards detected in our first model is consistent

with this view. If contemporary union strategy relinquishes control over the structure of the technical production process, then perhaps organized bargaining strength is more properly seen as an outcome of working conditions than as an **exogenous determinant of intrinsic rewards** that are attributable to the structure of work. Estimates for a revised model consistent with this reasoning appear in columns 2, 3, and 4 of Table 4. Omitting UNION from the INTR equation (column 2 of Table 4) hardly changes the other coefficients and requires no modification of our interpretation of the determinants of occupational inequality in intrinsic rewards. In column 4 of Table 4, organized bargaining strength is expressed as a function of intrinsic rewards, occupational requirements, authority position, and organizational size. As expected, groups lacking authority resources and groups that tend to be located in large organizations (e.g. in manufacturing industries) are likely to be more organized. However, this revised model does not support the suggestion that intrinsically unrewarding tasks contribute to unionization or similar organization of an occupation. While occupations with intrinsically unrewarding jobs tend to be more unionized (the zero-order correlation of INTR with UNION is -.382; see Table 2), in the revised model the net effect of intrinsic occupational rewards upon organized bargaining strength is positive (.176). It may be that an appropriate model for a **static** cross-sectional analysis should allow for reciprocal causation between the intrinsic nature of the task and unionization, but a fully satisfactory representation would require a dynamic model of historical data that incorporates both the antecedents and consequences of occupational organized bargaining strength over time.

Columns 5 and 6 of Table 4 present estimates for regression equations where the mean Siegel prestige score (Siegel, 1971) for each occupational group is the dependent variable. The first equation could be considered part of a model of occupational inequality where the prestige score (PRSTG) is a measure of a third occupational reward in addition to intrinsic and extrinsic rewards. Comparing the estimates in column 5 with those in columns 1 and 3, it can be seen that the determinants of the prestige score parallel neither those of intrinsic rewards nor extrinsic rewards. As with the latter two measures, occupational requirements has the largest relative effect on the mean prestige score, but the organizational size context of an occupational group has a modest positive effect. Authority position has a small positive effect upon the mean prestige score , similar to its relationship to extrinsic rewards, but unlike its contribution to intrinsic rewards. We believe that the "hybrid" nature of the determinants of the mean prestige score compared to those of the other measures of rewards reflects the conceptual ambiguity of prestige ratings as a measure of occupational rewards at the positional level of analysis. (The evidence is certainly not conclusive; we base our interpretation more upon our conceptualization than upon the estimates in Table 4.)

The estimates in the last column of Table 4 are presented simply as a descriptive assessment of how mean prestige ratings are predicted from the measures of rewards, requirements, and resources. The requirement measure is the best single predictor of the mean occupational prestige rating, and both organizational size and authority position have modest net effects. The size effect may be an artifact of differential detailed

occupational composition across those major occupational groups that we have subdivided by major industry (for example, the detailed occupational composition of managers in retail trade probably differs from that of managers in manufacturing, and the latter group scores higher on both mean prestige rating and mean organizational size). However, this argument should also apply to the intrinsic and extrinsic reward equations, yet no similar positive effects of size were detected in those equations. Another puzzling finding is the lack of a net contribution of either of the reward measures to the mean prestige score, despite the moderate zero-order correlations of each reward measure with the mean prestige rating (.601 and .651 respectively for intrinsic and extrinsic rewards; see Table 2). Again, the ambiguity of the conceptual meaning of prestige ratings at the occupational level of analysis and the colinearity of the measures make this result difficult to interpret. If prestige ratings can be viewed as synthetic composites of popular perceptions of the goodness of occupations with respect to their requirements, rewards and resources, then rewards should have nontrivial positive net effects in the prediction equation.

In a final analysis we investigated whether a single intervening process underlies the manner in which inequality in occupational requirements and resources determine inequality in occupational rewards. A canonical correlation analysis was performed that related the composite requirement measure (REQ) and the three resource measures (SIZE, SUP, UNION) to the two measures of occupational rewards (INTR, EXTR). Should a single intervening process prevail, for example, if the relationships are mediated by an unobservable variable such as "status," "prestige," or

Table 5.

Canonical Correlation Representation of the Relationship Between Occupational Rewards and their Determinants; Standardized Canonical Coefficients (N=40)

	First Canonical Variate	Second Canonical Variate
First Set		
REQ	.991	- .275
SIZE	- .572	.812
SUP	- .215	1.074
UNION	.045	.233
Second Set		
INTR	1.087	-1.146
EXTR	- .116	1.575
Canonical ρ	.905	.565

overall "goodness" of an occupation, then we should detect a single pair of canonical variates relating a linear composite of rewards and resources to a weighted sum of intrinsic and extrinsic rewards (see Hauser and Goldberger, 1971:106-114). If a second nontrivial pair of canonical variates is extracted, the notion of a single intervening process is less tenable. The results presented in Table 5 show that we detected two meaningful pairs of canonical variates. The first pair of variates weights intrinsic rewards ten times more strongly than extrinsic rewards; that is, the first pair of canonical variates essentially accounts for varation in intrinsic occupational rewards. Consequently, the standardized canonical coefficients are nearly identical to the regression coefficients reported in column 1 of Table 4 (and the first canonical correlation is nearly identical to the corresponding multiple correlation coefficient), and the interpretation is identical to that for the regression analysis. The second pair of canonical variates weights the two measures of rewards more equally but with opposite signs. Therefore, the second pair of variates might be interpreted as accounting for the "trade off" dimension of extrinsic versus intrinsic rewards discussed above in the context of the discriminant analysis of occupational rewards. Thus, both authority position (SUP) and organizational resources (SIZE) can be seen as contributing to the extrinsic side of the trade off, and organized bargaining strength (UNION) appears to have a similar but smaller effect. Occupational requirements (REQ), in contrast, make a small relative contribution in the intrinsic direction.

The various statistical models presented above suggest that occupational task requirements are strongly related to both intrinsic and

extrinsic occupational rewards (especially the former), and that occupational resources are utilized to make claims upon the value of the output of the production but are not utilized to manipulate the production process to enhance intrinsic rewards. Because of the preliminary nature of the analysis and problems with the data--the aggregation of occupational groups, the incompleteness of the resource measures, the combining of conceptually distinct requirement measures--these results are far from conclusive. We see the utility of this data analysis not in the answers we were able to provide but in the questions we were able to ask given a meaningful, coherent conceptualization of the structure of occupational inequality. Where our analysis is limited, we have noted that our conceptualization clearly points the direction to be taken in future research. We accept the few results presented here as hypotheses to be explored in the next stage of our conceptual elaboration and empirical research.

Conclusions

In this paper we have presented a conceptualization of the structure of occupational inequality. At the positional level of analyses, inequality in intrinsic and extrinsic occupational rewards is attributable to inequality in occupational task requirements and to inequality in the resources available to occupational groups. We demonstrate the viability of the conceptualization with a preliminary empirical analysis of the structure of occupational inequality in the contemporary United States. Where the empirical analysis is methodologically limited

or otherwise incomplete, the conceptualization suggests a relatively well defined program for future research.

Conceptualization and research at the positional level of analysis is not completely separable from that at the level of individual attainment. We have noted the manner in which the occupational structure underlies modes of individual attainment and have discussed some recent attempts to incorporate "structural" variables into those models. A research program focusing on the occupational structure as vigorously as the research of the past decade has focused upon individual attainment can only increase our understanding of the mechanisms of social inequality in contemporary societies.

NOTES

[1]While these researchers use similar data and models, their numerical estimates do of course differ, often systematically because of different assumptions about measurement error, omitted variables, etc. But what would be the outcome of the ideal situation of complete consensus about the appropriate model? There has been little, if any, discussion of how much numerical results would have to change in order to alter a given analyst's substantive conclusions. Given a consensus on the model, it might appear that the debate over the role of education in transmitting social class versus promoting mobility could be resolved by a nominal or descriptive interpretation of the estimated parameters. However, implicitly underlying the different interpretations of the role of education are different conceptualizations about what the net socioeconomic return to education is or is not, independent of social origins. The return may, for example, reflect to varying degrees a functional compensation for an investment in training, the outcome of a screening process, or organizational social control processes. While some such structural mechanism is usually assumed to produce the return to education, it is seldom articulated.

[2]The concept of occupational structure has a number of connotations and implications. Hauser and his colleagues are interested in occupational structure as it relates to the distribution of individuals across occupational positions. Our concerns are somewhat different. We view the occupational structure from a perspective of differentiation. That is, the occupational structure consists of the distribution of

occupational positions and the social differences associated with those positions (cf. Blau, 1975). Therefore, in examining the transformation of the United States occupational structure we would focus upon the changing differences associated with social positions rather than the changing distribution of individuals among those positions.

[3]We admit that a synthetic concept of "status" or "prestige" embodying popular perceptions of the goodness of occupations as indexed by rewards, requirements and hierarchical position may be a very real social force affecting the decisions and movements of individuals in the occupational structure. We do question, however, the place of such measures at the positional level of analysis. While the classical concept of prestige as socially structured patterns of deference and derogation suggests an intrinsic occupational reward at the positional level of analysis, it appears to us that neither prestige nor status scales--measures constructed for the analysis of individual attainment--is an analytically distinct measure of such an intrinsic occupational reward. The issue remains a point of considerable controversy which we do not claim to have resolved. Consequently, we have included in our empirical analysis some results where the Siegel prestige scale is assumed to be a measure of an occupational reward.

[4]In Giddens' view, all of the resources discussed here could be considered "market capacities." According to Giddens, the market ("system of economic relationships founded upon relative bargaining strength of different groupings of individuals"; 1973:102) is the locus of a power conflict based on the differential market capacities among socially structured groups. Apart from disagreeing with such a broad definition

of "market", we believe that his view obscures the relational context in which occupational resources are exercised by groups to obtain rewards. For example, occupational authority is not simply a bargaining chip to oppose union organization; it provides a means to manipulate the very relationship of unionized occupations to the production process (Braverman, 1974). We see market capacity as just one kind of occupational resource.

[5]A static examination of the contemporary occupational structure suggests that sectoral differentiation of labor market structures may be an important occupational resource. But from an historical perspective it is also an outcome of past interactions of technical and social relations of production, reflecting union strategies and employer attempts at social control in response to concentration of capital, automation of production processes, and skill specifically associated with advances in production technique (Braverman, 1974; Doeringer and Piore, 1971).

[6]A complete mapping of the three-digit occupation and industry codes into our forty occupational groups is available upon request. A forty-first group, "farm laborers," was omitted from the analyses reported here, because it contained only seven sample cases. In two instances, occupational groups were constructed even though they included less than twenty cases. Since occupations of retail and wholesale sales are quite different, we decided to retain the distinction, even though it resulted in only 13 cases in the latter category. For similar reasons we retained the category of "managers and administrators--finance, insurance and real estate" which contains 17 cases.

[7]Department of Labor Employment Service personnel provided GED and SVP ratings for 4000 detailed job titles. These titles were subsequently mapped into Census three-digit occupation categories, and unweighted averages of the GED and SVP scores were assigned to the three-digit occupation codes. We have aggregated these scores to the level of our forty occupational groups, where the average for each group has been weighted by the distribution of three-digit occupation codes for that group in the Quality of Employment Survey sample. For further information about the construction and use of GED and SVP scores see U.S. Department of Labor (1968:651-653) and Horowitz and Hernstadt (1966:232-240).

[8]Figures 3 and 4 suggest that what Braverman (1974) has described as a de-skilling of the American labor force may in fact be a polarization of skills. There has been a continued increase since 1900 in the proportion of the nonagricultural labor force in the nonmanual occupations with considerable general, specific and educational requirements (professional groups, and to a lesser extent, managerial groups), but a more dramatic increase has occurred (from about 5 percent of the nonagricultural labor force in 1900 to about 16 percent in 1960) in the clerical nonmanual occupations that have relatively lower requirements. While the proportion of unskilled laborers has decreased steadily from about 20 percent of the nonagricultural labor force to about 6 percent in 1960, the proportion of skilled craftsmen appears to have decreased slightly in recent years, and the proportion of unskilled service workers (other than private household workers) has increased from less than 6 percent to 10 percent in 1960. The proportion of "semi-skilled" operaters in the nonagricultural labor

force has remained essentially constant at about 20 percent since 1900 (U.S. Bureau of the Census, 1960:74, 1969:222).

[9]Also not included in the analysis reported here are measures of ownership resources and measures of the impact of the state as an occupational resource. Two such measures, proportion of an occupational group self-employed and the proportion employed by the state, are readily available from the "class of worker" designation typically used in the assessment of occupation in survey data. Other state and ownership measures (for example, the extent of ownership holdings of managerial groups and the proportion of inputs or outputs of the production process supplied or consumed by the state) are not so easy to obtain. In order to obtain such measures future research cannot rely solely on social surveys as a source of data.

[10] Total annual income includes all sources of income, not just occupationally specific earnings. Future research will using additional sources of data will incorporate occupationally specific earnings adjusted for hours and weeks worked.

[11]The category "health professionals" is composed primarily of technicians, not physicians.

[12]This ignores a relational aspect of supervisory resources--they may affect the intrinsic rewards available to other occupational groups.

[13]Experimentation with models including three multiplicative interaction terms, SIZE x REQ, SIZE x SUP, and SIZE x UNION, yielded results extremely sensitive to which of the interaction terms were included in the equations. While the magnitude of the effects were quite unstable, we did consistently detect some interactions. The effect of requirements on intrinsic rewards appears to be larger among those occupational groups located in large organizations, but the effect of requirements on extrinsic rewards appears to be less among those groups. The affect of both authority position and union organizing strength also appears to be larger among groups located in large organizations. The latter findings, if replicable, suggest that occupational groups can exploit organizational resources through authority position and organized bargaining strength.

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